

Amendments to the Claims: This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A bioreactor comprising:

a vessel having a bottom region and an interior configured to contain an aqueous suspension of biomass and media;

a first gas outlet at the bottom region of the vessel, said first gas outlet positioned to introduce a first stream of gas providing a first plurality of cavities to promote growth of said biomass on said media;

a lift tube disposed within the vessel, the lift tube having an inlet disposed at the bottom region of the vessel; and

a second gas outlet positioned to feed gas into the lift tube at a location proximal to the inlet of the lift tube, said second gas outlet configured to introduce a second stream of gas providing a second plurality of cavities to promote separation of said biomass from said media in said lift tube,

wherein said second gas outlet is configured to introduce cavities larger than said cavities introduced by said first gas outlet.

2. (Original) The bioreactor of claim 1 wherein there is a plurality of lift tubes disposed within the vessel.
3. (Original) The bioreactor of claim 1 wherein the first gas outlet comprises a fine bubble aerator.
4. (Original) The bioreactor of claim 1 further comprising at least one gas source connected to deliver gas to the first gas outlet, to the second gas outlet, or to the first gas outlet and the second gas outlet.

5. (Currently Amended) The bioreactor of claim 4 ~~±~~ wherein the gas is air.
6. (Currently Amended) The bioreactor of claim 4 ~~±~~ wherein the gas is oxygen.
7. (Currently Amended) The bioreactor of claim 1 wherein the vessel is a configured to receive waste water from a source of waste water~~treatment vessel~~.
8. (Original) The bioreactor of claim 1 wherein the lift tube is oriented substantially vertically within the vessel.
9. (Currently Amended) In a bioreactor containing biomass and media, a method for promoting biomass growth and separating biomass from the media, said method comprising the steps of:

introducing a first stream of gas providing a first plurality of cavities into the bioreactor to promote the growth of biomass on the media; and

introducing a second stream of gas providing a second plurality of cavities into the bioreactor near an inlet of a lift pipe to generate sufficient shear forces to separate biomass from the media,

wherein the second stream of gas introduces cavities larger than said cavities introduced by the first stream of gas.
10. (Original) The method of claim 9 wherein the step of introducing the first stream of gas is performed through an air sparger.
11. (Original) The method of claim 10 wherein the step of introducing the first stream of gas comprises passing the gas through a fine bubble aerator.
12. (Original) The method of claim 9 wherein the steps of introducing the first stream of gas and the second stream of gas comprise introducing the first stream of gas and the second stream of gas from a gas source.

13. (Original) The method of claim 9 wherein at least one of the introducing steps comprises introducing air.
14. (Original) The method of claim 9 wherein at least one of the introducing steps comprises introducing oxygen.
15. (Original) The method of claim 9 further comprising the step of treating waste water in the bioreactor.
16. (Original) The method of claim 9 further comprising the step of adding a contaminated waste water stream into the vessel before introducing the first and second streams of gas.
17. (Original) The method of claim 16 further comprising the step of removing a purified water stream from the bioreactor after sufficient gas has been introduced to the bioreactor that the contaminants have been reduced.
18. (Currently Amended) In a bioreactor comprising a vessel having an interior configured to contain an aqueous suspension of biomass and media and a lift tube having an inlet, a method comprising the steps of:
- introducing a first stream of gas providing a first plurality of cavities into the bioreactor to promote the growth of the biomass on the media; and
- introducing a second stream of gas providing a second plurality of cavities into the inlet of the lift tube to generate shear forces to separate the biomass from the media,
- wherein the second stream of gas introduces cavities larger than said cavities introduced by the first stream of gas.
19. (Original) The method of claim 18 wherein the step of introducing the first stream of gas comprises passing the gas through a fine bubble aerator.

20. (Original) The method of claim 18 wherein the steps of introducing the first stream of gas and the second stream of gas comprise introducing the first stream of gas and the second stream of gas from a gas source.